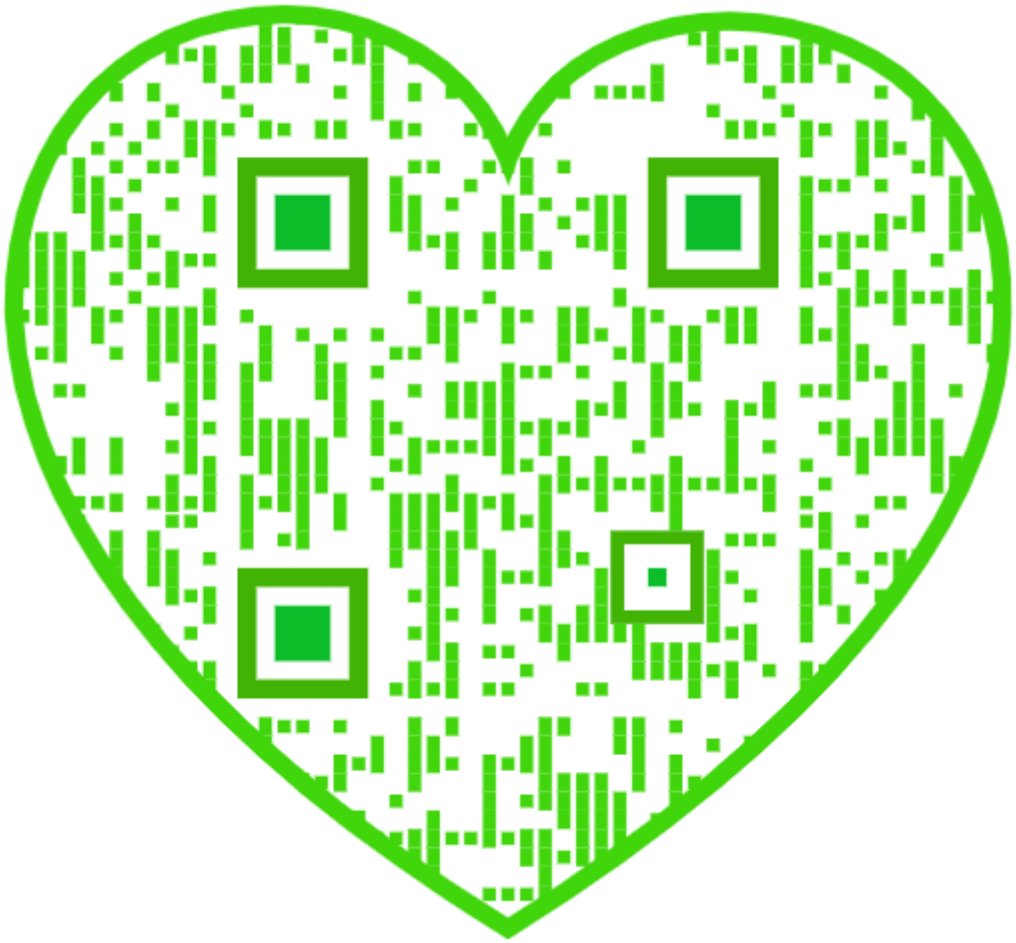

THE GEOGRAPHY OF

INDIANA

BY

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Supplement to

Dryer's High School Geography

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NEW YORK CINCINNATI CHICAGO

BOSTON ATLANTA

Fig. 37[1]

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THE GEOGRAPHY OF INDIANA

Position.—The geographical character of Indiana is largely determined by its central position. (1) It lies nearly midway between the Laurentian peneplain and the Gulf coastal plain, and between the Atlantic coast and the High Plains (Fig. 302). Although an inland area about 600 miles from the sea, it is equally distant from the continental interior. (2) It is included in the Glacial Drift plain, but about one sixth of it escaped glaciation. To these facts are due a large area of smooth surface and productive soil and a smaller area of rock exposure and hilly topography. (3) It lies in the midst of the so-called north temperate zone and of the Mississippian climatic region, which has a rainfall between 20 and 60 inches (Figs. 164, 188, 305, 306). This gives it a long, moist growing season and makes it a part of the Atlantic provinces of agriculture and dense population (p. 356 and Figs. 236, 239, 308). (4) It is on the boundary between summer forest and prairie (Fig. 192), and covers a portion of the eastern interior coal field (Fig. 310), which adds greatly to its resources for manufacture. (5) It spans the space between Lake Michigan and the Ohio River, and is accessible by the waterways of the St. Lawrence and Mississippi systems (pp. 103, 105–111, 374–375). All the great trunk lines of railroad between the Atlantic seaboard and the Middle West are obliged to cross Indiana (Figs. 315, 316), which thus plays the part of a bridge or gap connecting the east and the west. The center of population of the United States has been located in Indiana for thirty years (Fig. 313).

On account of its medial position, Indiana is not a land of contrasts and extremes, yet possesses in a moderate degree all

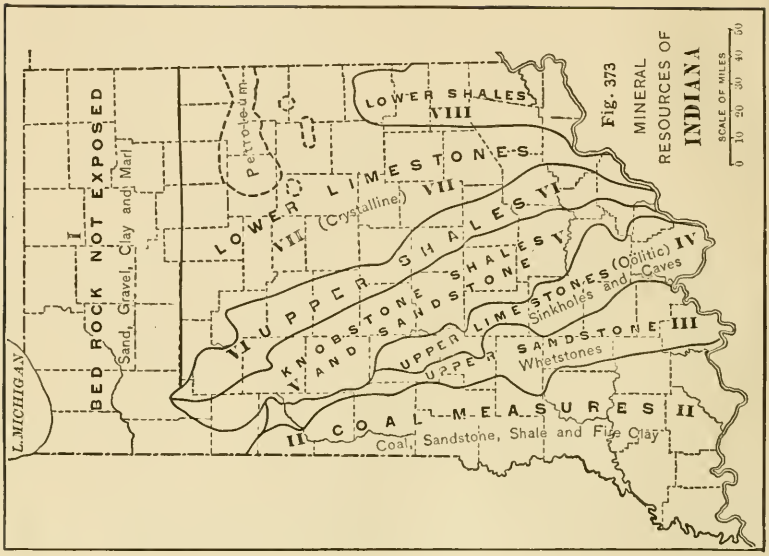

Fig. 373
MINERAL RESOURCES OF
INDIANA

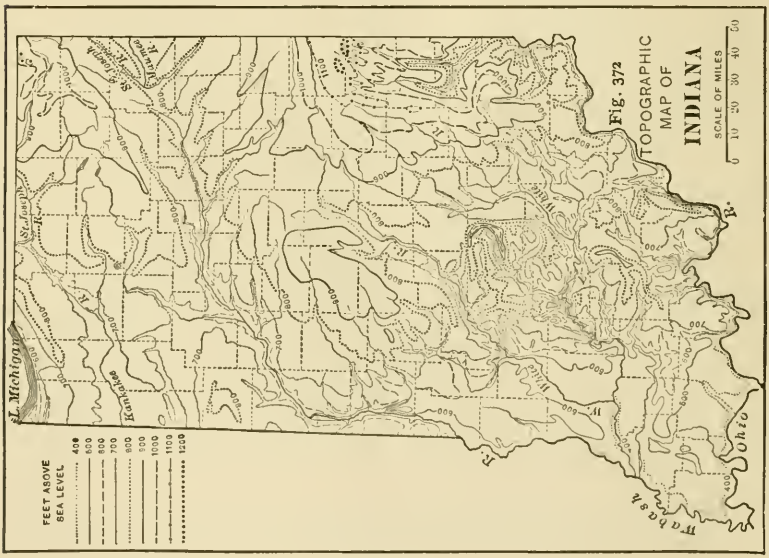

Fig. 372
TOPOGRAPHIC MAP OF
INDIANA

the characteristics of the Mississippian natural province which surrounds it (Fig. 307 and pp. 357–359).

Indiana is too much in the way to be isolated, antiquated, or one-sided, yet is not in danger of being swamped by foreign elements. If it should ever cease to be the home of a prosperous community of enlightened and happy people, the event will not be due to adverse geographic position or environment.

Topography.—The highest ground in Indiana is the smooth upland of southern Randolph county, where the elevation reaches nearly 1300 feet above the sea. From this the surface of the state slopes gently to the northwest, west, southwest, and south, as is shown by the courses of the principal rivers. In the northeast corner of the state a secondary height of land, with hilltops nearly 1200 feet above the sea, sends drainage to the Maumee, Wabash, and Illinois rivers and Lake Michigan. A small area above 1100 feet in Brown county has little influence on the drainage. About four fifths of the state lies between 500 and 1000 feet, and about one eighth lies below 500 feet. About 200 square miles at the northwest corner are occupied by Lake Michigan at an elevation of 581 feet. The lowest point, 313 feet, is at the southwest corner. The average elevation of the state is 700 feet.

Structure.—The bed-rock foundations of Indiana consist of numerous strata of shale, sandstone, and limestone several thousand feet thick. They have never been violently disturbed or broken, but have been gently uplifted in the form of a broad, flat arch, the crest of which, extending northward from Cincinnati and curving towards Chicago, has been removed by erosion. Consequently the rocks of Indiana now dip gently away from the crest of the arch to the southwest and northeast and their beveled edges outcrop on the surface in long, narrow belts, extending north and south (Fig. 373).

The surface of Indiana has probably been above the sea ever since the coal period. During these millions of years it was carved by weather and stream erosion into a complex system of branching valleys with corresponding ridges between. At a comparatively re-

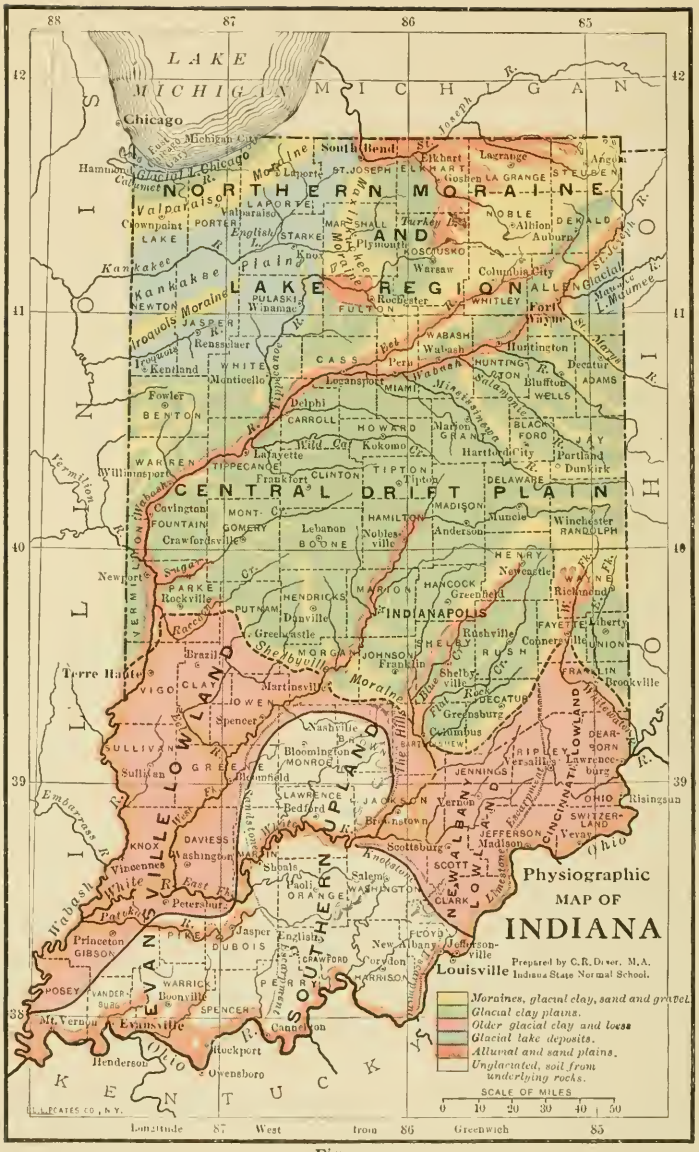
LAKE MICHIGAN
MICHIGAN
Chicago
South Bend
NORTHERN MORAINE AND LAKE REGION
CENTRAL DRIFT PLAIN
WABASH LOWLAND
ILLINOIS
OHIO
KENTUCKY
INDIANAPOLIS
Terre Haute
Evansville
Louisville
Physiographic MAP OF INDIANA
Prepared by C. R. Dryer, M.A. Indiana State Normal School.
Morainic, glacial clay, sand and gravel
Glacial clay plains.
Older glacial clay and loess
Glacial lake deposits.
Alluvial and sand plains.
Unglaciated, soil from underlying rocks.
SCALE OF MILES
0 10 20 30 40 50
Longitude 87 West from 86 Greenwich 85

Fig. 374

VI

cent period Indiana has been invaded by at least two great ice sheets from the north. The first covered the whole state except the area left uncolored on the map, p. vi (compare with Figs. 110, 113). The drift sheet which it deposited is thin and somewhat peculiar in character. The second ice sheet was much more vigorous and enduring, and changed the original surface of the country completely. It advanced in three separate lobes, which were not all in existence at the same time. The first came from the basin of Lake Michigan, and occupied northeastern Illinois and an irregular strip along the western borders of Indiana as far south as Parke, Putnam, and Morgan counties. A narrow and feeble lobe of ice from Saginaw Bay extended into northern Indiana to Fulton county. Last of all, an immense mass of ice from the basins of Lakes Huron and Erie spread southwestward across Michigan, Ohio, and central Indiana to the morainic line shown on the map extending from Benton county to Bartholomew, Fayette, and Franklin counties. These later ice lobes deposited a much thicker sheet of drift than the earlier ones, and in melting left many morainic ridges. The old valleys were filled and the former rough surface was buried and plastered over with a heavy coat of clay, sand, and gravel. Thus the northern two thirds of the state was converted into a smooth plain, where the contour lines are far apart and make large curves, showing gentle slopes and sluggish drainage (Figs. 34, 35, 372).

In the southern third of the state the alternating belts of harder and softer rock determine a rugged and broken surface. The contour lines are crowded and crooked, showing steeper slopes and more rapid drainage.

Physiographic Regions.—Indiana is naturally divided into three physiographic regions: 1. *Southern Indiana.* 2. *The Central Drift Plain.* 3. *The Northern Moraine and Lake Region.*

Southern Indiana is not all hilly, but its surface is generally more rugged than that of the rest of the state. This is because the glacial drift is either absent or too thin to mask the bed-rock surface. It presents from east to west a succession of lowlands and uplands bounded by relatively steep slopes or escarpments formed by the outcropping edges of the harder strata (p. vi).

The Cincinnati Lowland.—Along the eastern border of the state a belt of soft shales from 20 to 30 miles wide forms a lowland which

Fig. 375.—Upland, Martin county.

extends from the Ohio River to Wayne county. It slopes from 900 or 1000 feet above sea level on the north and west to 600 or 800 feet at the edge of the Ohio bluffs.

The Limestone escarpment, a ridge with a gentle slope to the west and a steeper slope to the east, extends from the Ohio near Madison northward about 40 miles and separates the Cincinnati Lowland from the New Albany Lowland.

The New Albany Lowland, due to erosion of the soft shales which overlie the limestones, extends from New Albany to Shelby and Rush counties. Its width on the Ohio is only 10 miles, but in the northern portion more than 40. Its surface slopes westward from 800 or 900 feet at the edge of the Limestone escarpment to less than 600 at the foot of the Knobstone escarpment on the west.

The Knobstone escarpment is the most prominent topographical feature in Southern Indiana. It is the eastern edge of an upland which falls abruptly 300 to 600 feet. Its bold, irregular face may be traced from the Ohio northward to Johnson county. It is due to a great thickness of easily eroded shales capped by more resistant strata of sandstone. In Floyd, Clark, Scott, Washington, and Jackson counties, the steep, dissected face of the escarpment, with the detached fragments of the upland outlying on the east, are known as "the Knobs," the Guinea and Silver hills. North of the East White River the escarpment is less steep and irregular, and is called "the Hills."

The Southern Upland is bounded on the east by the Knobstone

escarpment, and on the west by a descent almost as abrupt but about half as high, formed by a bed of sandstone. Most of the surface has been maturely dissected by streams into a complex system of valleys, irregular ridges, and isolated knobs. The hills are fragments of the original plain left by the cutting out of the valleys between, and the large streams are 200 to 600 feet below the level of the divides. There is little level ground except the flood plains of the streams. The general elevation ranges between 800 and 900 feet, but in Brown county the upland obtains its most rugged form and highest elevation, 1148 feet, in Weed Patch Hill.

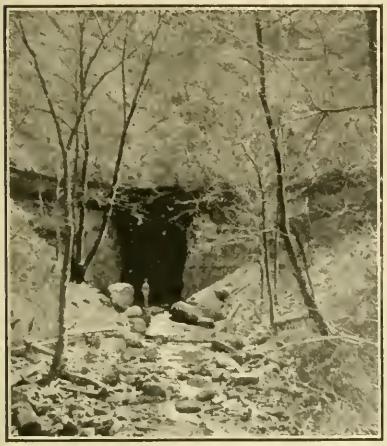

Fig. 376.—Donaldson's cave, Lawrence county.

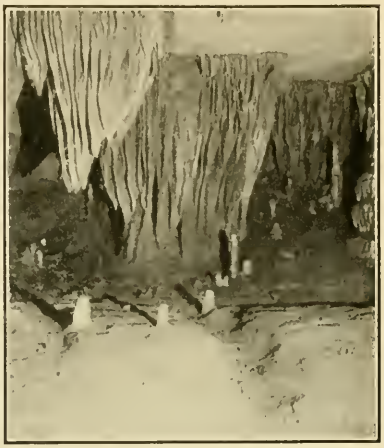

Fig. 377.—Interior of Marengo cave.

The middle portion of the upland is underlain by porous and soluble limestones and is known as the "sink-hole region." The surface is pitted with depressions which have no surface outlet for drainage. The majority are gently sloping, funnel-shaped basins, from a few yards to several acres in area, formed by the drainage of surface water through a central opening into an underground stream. Some have nearly vertical walls, 40 to 70 feet high, and have been produced by the falling in of the roof of a cavern. These are popularly known as "gulfs." The drainage is largely subterranean, some streams, like Lost River in Orange county, disappearing and reappearing upon the surface at irregular intervals. Many of these underground channels have been greatly enlarged and then abandoned by the streams and can now be traversed for long distances. Wyandotte and Marengo caves in Crawford county are among the largest

in America. The former has been explored for 23 miles, and contains rooms 70 to 185 feet high and from 200 to 600 feet wide (Fig. 132).

The Evansville Lowland slopes from the border of the Middle Upland gently to the Wabash, and is underlain by the soft shales and sandstones of the coal measures. Its surface is smooth or gently rolling and traversed by the wide valleys of the Ohio, Wabash, and White rivers, which converge towards their junction at the southwest corner of the state.

Fig. 378.—A ravine in the central plain, Parke county.

Glacial Drift.—A little more than half of Southern Indiana is thinly covered by the deposit of an early ice sheet, as shown by the course of the glacial boundary on the map (p. vi). This ice sheet, held back by the Southern Upland, wrapped its edge around the escarpments and pushed on across the Ohio River in the east and nearly to the mouth of the Wabash in the west. The older drift is finer

grained, more compact, and more deeply weathered than the newer drift on the north, from which it may be readily distinguished by its reddish-brown color. On the uplands it is made up mostly of clay from 10 to 30 feet thick; in the valleys of sand and gravel from 25 to 50 feet thick. Near the Wabash River the clay is overlain by a fine yellow or ash-colored silt, from 5 to 10 feet thick, called loess (p. 144) and white clay. The drift sheet is not heavy enough to hide the original features, but helps to heighten the contrast between the smoothness of the lowlands it covers and the roughness of the uplands from which it is absent. Chestnut Ridge, in Jackson county, 8 miles long and from 50 to 170 feet high, is the only conspicuous marginal moraine of the older ice sheet in Indiana.

On account of its large area of rough surface and poor soil, Southern Indiana, as a whole, is less productive and has fewer towns and railroads and a sparser population than the rest of the state.

Fig. 379.—Glacial plain and moraine, Montgomery county.

The Central Drift Plain.—Nearly two thirds of Indiana is covered with a sheet of glacial drift so heavy as generally to bury out of sight the irregularities of the bed-rock surface. The central part has thus been converted into a smooth and

Fig. 380.—Map of Erie moraines.

nearly level plain, the surface of a mantle of gravelly clay from 100 to 200 feet thick. It is bounded on the south by a nearly continuous marginal ridge called the Shelbyville moraine, and on the north by the valleys of the St. Joseph and Wabash rivers from northern Allen county to southern Warren. The streams have cut their channels a little way into the drift, and their broad, shallow valleys form almost the only relief to the monotony of the landscape. The plain is traversed by a complex series of moraines which mark the successive halts in the retreat of the ice sheet. They consist of ridges and belts of knolls and mounds usually too broad and gentle in slope to be conspicuous, but notable in their influence upon the courses of streams.

The Central Plain comprises the richest farming lands in the state and consequently possesses more wealth and a denser population than the other regions.

The Northern Moraine and Lake Region.—The portion of the state north of the Wabash River is more varied than the

Central Plain. The greater part of this region is occupied by massive and rugged moraines, the beds of extinct glacial lakes, and sandy outwash plains.

The Calumet District.—The head of Lake Michigan is bordered by a strip of coastal desert 5 to 15 miles wide. A part of it was once covered by the waters of glacial Lake Chicago, and it is now oc-

Fig. 381.—Drifting Sand Dune, 200 feet high, near Michigan City.

cupied by beach ridges and sand dunes, which have been blown up by the winds. The district is bounded by the Valparaiso moraine, which is 7 to 15 miles wide and from 100 to 200 feet above the level of Lake Michigan.

The Kankakee plain is a region of extensive marshes with gravel plains and low ridges of sand around its eastern and southern borders. It is rimmed by moraines, and during the melting away of the ice lobes was the site of many shallow lakes into which sediment was washed from the surrounding ice. Its southern part is traversed by the Iroquois moraine, which crosses Jasper and Newton counties.

The Maxinkuckee moraine occupies a large part of Marshall and St. Joseph counties and presents a moderately diversified surface of knolls and basins. One of the most complex moraines in America extends from Cass county to the northeastern corner of the state. The breadth of the main body varies from 5 to 25 miles, with numer-

ous spurs and branches to the northwest. The thickness of the drift is nowhere less than 200 feet and in some places reaches 500 feet. Its surface varies from slightly rolling to the steepest and sharpest possible knobs and gravel hills. The highest and most rugged portions occur in the counties of Kosciusko, Whitley, Noble, Lagrange, Elkhart, Dekalb, and Steuben.

Morainic Lakes.—The great morainic belts of northern Indiana abound in undrained hollows and basins which are occupied by ponds, lakes, and marshes. Some counties contain 100 lakes each, and the whole number in the state cannot be less than 1000. Most of them are small, ranging from an area of a few acres up to a few hundred acres. Turkey or Wawasee Lake, in Kosciusko county, with an area of 5.66 square miles, Lake Maxinkuckee, in Marshall county, with an area of 2.97 square miles, and James Lake, in Steuben county, with an area of 2.6 square miles, are the largest. Seventeen have an area of more than one square mile each. Their depth seldom exceeds 100 feet.

Many of the smaller lakes have rounded cauldron-shaped basins known as "kettle holes," "potash kettles," and "soap dishes." The larger lakes are long and narrow or complex in outline and made up of connected kettle holes, channels, and irregular depressions similar to the surface of the moraines around them. More than half of the original lake basins have been filled with wash from the hills, deposits from springs, the growth of aquatic vegetation, and the shells of animals, and have thus been converted into marshes or muck meadows. These processes are slowly filling the existing lakes, which are generally bordered by marsh lands (pp. 125–128). The combination of hills, valleys, and lakes forms a landscape unsurpassed in picturesque beauty between the Ohio and the Great Lakes. This region attracts many summer visitors.

The eastern part of Allen county is occupied by a very level plain, once the bed of glacial Lake Maumee, which had its outlet at Fort Wayne, westward, into the present Wabash valley at Huntington. The former beaches (p. 129) of this lake are known as the Hicksville and Van Wert ridges, and have long been used as naturally graded roadways.

Drainage.—The Ohio River (pp. 107–108) forms the southern boundary of Indiana for about 350 miles. As far down as Cannelton its valley is from one to two miles wide, and is bounded by bluffs from 300 to 500 feet high. At Madison it bends southward along the face of the Limestone escarp-

Fig. 382.—Clifty Falls, on a tributary of the Ohio.

ment, and at New Albany is again deflected by the Knobstone escarpment. In the vicinity of New Albany and Louisville it crosses a belt of soft shale, and its valley widens to four miles, with bluffs only 150 feet high.

Here a heavy deposit of gravel, on which the city of Louisville stands, has filled the original channel, and the river now flows across a rock shelf, over which it falls 23 feet in a little more than two miles, forming the rapids called the Falls of the Ohio. Below Cannelton, in crossing the softer rocks of the Evansville Lowland, the valley widens to 5 or 10 miles, and the bluffs are low. The Ohio is subject to great floods, the variation in depth of water at Lawrenceburg being more than 70 feet. It is navigable most of the year for vessels drawing six feet of water.

Between the mouth of the Great Miami and the mouth of the Wabash, the Ohio has no large tributaries from Indiana. From the Cincinnati and New Albany Lowlands and the Southern Upland the streams descend from 300 to 500 feet in a course of from 10 to 20 miles. Their valleys are generally deep and narrow, but waterfalls are few. The most notable ones are in Jefferson and Ripley counties, where the streams descend the Limestone escarpment. Here Clifty Creek falls about 70 feet, forming the highest cataract in the state.

The Wabash River is the great artery of Indiana, which it traverses for more than 400 miles. With its tributaries it drains two thirds of the state. The preglacial Wabash had for its headwaters the St. Joseph and St. Marys and was the outlet of Lake Maumee. Its former valley between Fort Wayne and Huntington, abandoned by the river, forms an easy pass for canal and railroad from Lake Erie to northern Indiana.

The Wabash River has had a complex history, and its valley presents a corresponding variety of features and stages of development. From its source to Huntington the stream follows the outer face of the Wabash moraine and the valley is very young, being but a shallow trench in the drift, scarcely wider than the stream. Between Huntington and Delphi it crosses a belt of limestone, which forms in many places island buttes, terraces, and steep bluffs. Below the mouth of the Tippecanoe, the river occupies a large preglacial valley, cut through shales and sandstones, and half filled with massive

Fig. 383.—Falls, Shades of Death, on a tributary of the Wabash.

terraces of sand and gravel (Fig. 20). Below the Shelbyville moraine, the Wabash valley varies in width from 6 to 15 miles and resembles that of the lower Ohio and Mississippi (Figs. 31, 32, 75, 76). The flood plain is bordered by terraces; oxbow bends, cutoffs, and bayous abound, and the meanders of the stream increase its length to 225 miles (Figs. 97, 98).

The Wabash was formerly navigated as far up as Lafayette, and steamers still reach Terre Haute. The improvement of the lower river to create and maintain a navigable channel is a project under investigation and may be accomplished in the near future.

Of the northern tributaries of the Wabash, the Eel River follows a direct course parallel with the great moraine, and was a channel of drainage along the margin of the ice sheet. The Tippecanoe winds about among the hills of Kosciusko and Fulton counties, descending from one lake or marsh to another, into the Kankakee plain, turns southward across the old lake bed and cuts a deep, meandering valley to the Wabash. The Salamonie and Mississinewa show remarkable parallelism with the upper Wabash and St. Marys, due to the fact that these four rivers are guided by a series of parallel moraines. Deer Creek and the three forks of Wild Cat Creek drain a belt of thick drift and touch bedrock only near their mouths. Sugar Creek has cut a gorge through the sandstones of Montgomery and Parke counties 250 feet deep, presenting a variety of picturesque bluffs, glens, and falls, of which those at the Shades of Death and Bloomingdale are the most celebrated (Fig. 383).

The West Fork of White River is second in length and volume to the Wabash, which it resembles in many ways. After following the moraine as far as Muncie, it flows southwestward through the Central Plain and the Evansville Lowland in a broad shallow valley. The many tributaries of the East Fork drain a part of the Central Plain and most of the New Albany Lowland. The main stream does not follow the lowland to the Ohio, but turns westward and cuts across the upland in a deep and narrow valley and joins the West Fork.

The Whitewater River rises in the same upland as the White, but flows directly southward to the Great Miami and Ohio; consequently it has an average fall of about eight feet to the mile. At Richmond it has cut a gorge into the lower shales 100 feet deep. The lower part of its valley contains heavy deposits of gravel washed from the moraine at its head.

The area in the northwest drained directly to Lake Michigan is small and traversed by the Calumet River. This stream is peculiar in that it flows westward parallel with the lake shore about 40 miles

and then flows back eastward about 20 miles to its mouth. It resembles an artificial canal more than a natural stream. The Kankakee and Iroquois rivers drain the flat outwash plain westward to the Illinois. Their fall is so slight that their current is scarcely perceptible, and their waters spread out over the marshes, forming shallow lakes without permanent or definite boundaries. This region is a famous haunt of ducks and other aquatic birds and is attractive to the sportsman.

The St. Joseph which enters northwestern Indiana from Michigan, was originally the headwaters of the Kankakee, but now at South Bend turns abruptly northward to Lake Michigan. The St. Joseph which enters Indiana from the northeast, and the St. Marys, which comes from the southeast, were once tributaries of the Wabash, but now turn back sharply at Fort Wayne to form the Maumee, which meanders over the old lake plain to Lake Erie.

Mineral Resources.—Indiana includes 6500 square miles of coal field. *Bituminous coal* is mined in eighteen counties, of which Vigo, Sullivan, Greene, Vermillion, and Knox, in the order named, are most productive. There are twenty distinct beds or seams, of which nine are from 3 to 11 feet thick and workable. The coal is mined sometimes by tunneling into a hillside, but oftener by shafts several hundred feet deep, some of which reach three or more seams. The most improved machinery for mining, hoisting, and pumping is generally used, and many mines are lighted and operated by electricity. The output in 1910 was 18,389,815 tons, valued at $20,813,000. The number of men employed was 21,878. The production of coal is now three times as great as it was ten years ago, the increase being due largely to the failure of natural gas.

Clay and Shale.—The value of products made from clay and shale is second only to that of coal. Common brick and tile are made from glacial and other clays in all parts of the state. The shales and fire clays of the coal measures are mixed and burned to make sewer pipe, drain tile, and paving and building brick of many varieties. The occurrence of coal, shale, and clay on the same ground has led to the establishment of extensive clay works at Terre Haute, Brazil, Mecca, and other localities. The total value of clay products in 1910 was about $8,000,000.

Portland Cement.—The increasing use of concrete for bridge and house construction (p. 298) has led to the extensive manufacture of Portland cement. It is made by mixing, burning, and grinding limestone and clay or furnace slag in proper proportions. Suitable materials are widely distributed in Indiana, and cement is made from the upper and lower limestones, the coal measure rocks, and deposits of marl in the glacial lakes. The total product in 1910 was 7,000,000 barrels.

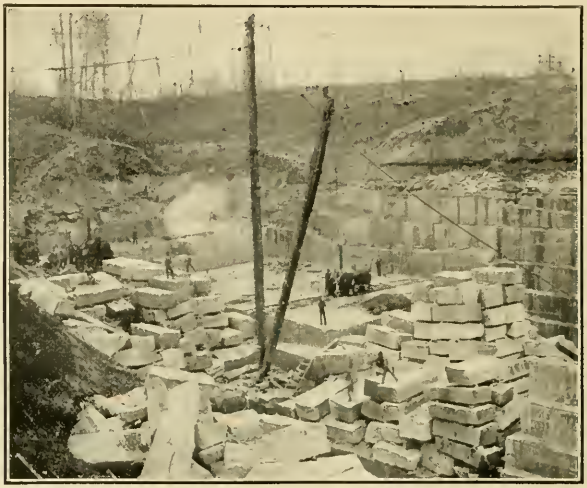

Fig. 384.—Oölitic limestone quarry.

Building Stone.—Workable quarries of building stone are well distributed all over the state except in the northern part. A belt of Mansfield sandstone suitable for foundations and bridge piers lies along the eastern borders of the coal field. The lower crystalline limestones are extensively quarried from the Ohio to the upper Wabash, much of it being burned for quicklime. The Bedford or oölitic limestone extending from Washington to Putnam county is one of the best building stones in the world. The beds are sometimes 50 feet thick, so that blocks of any desired size can be quarried. When fresh it can be easily sawn or turned in a lathe, and it seasons into a hard and durable stone. It is in demand for the finest buildings in New York, Chicago, New Orleans, and other American cities, and is even exported to Europe. The value of the output of Indiana quarries in 1910 was $4,777,900.

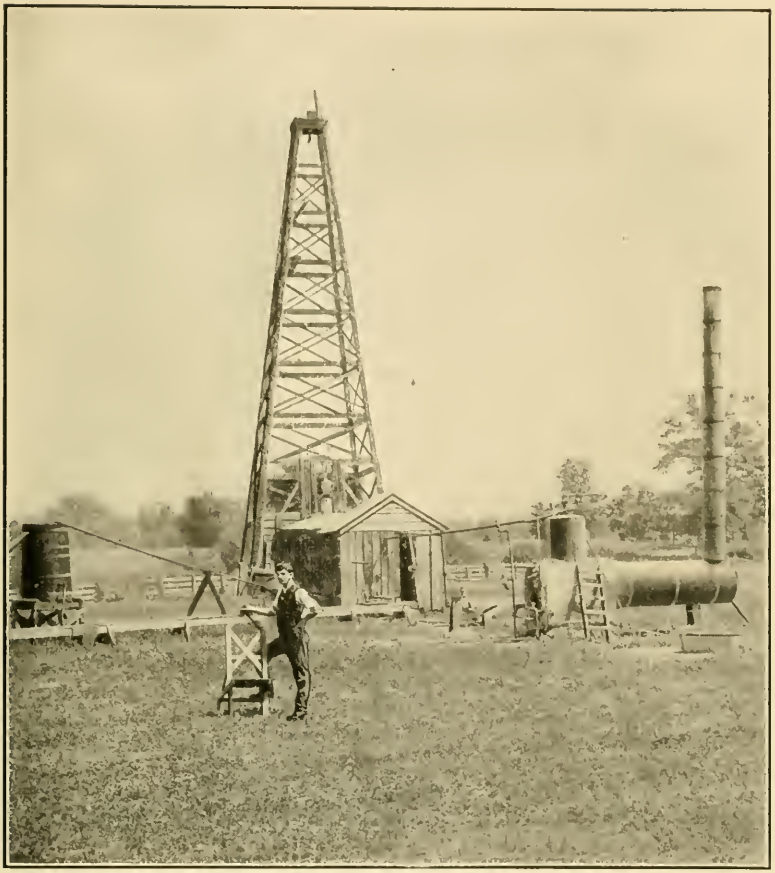

Fig. 385.—An oil well, Jay county.

Petroleum and Natural Gas.—The once famous oil and gas fields of east central Indiana are no longer important factors in the resources of the state. Very deep wells yielding both oil and gas have been bored in Pike, Gibson, Greene, and Sullivan counties, but the supply is neither large nor permanent. The oil production of 1904 was 11,000,000 barrels; that of 1910, a little over 2,000,000. The value of natural gas produced in 1903 was $7,000,000; in 1910, $1,700,000. The discovery and use of gas was a powerful stimulus to manufacture, the effects of which are still evident.

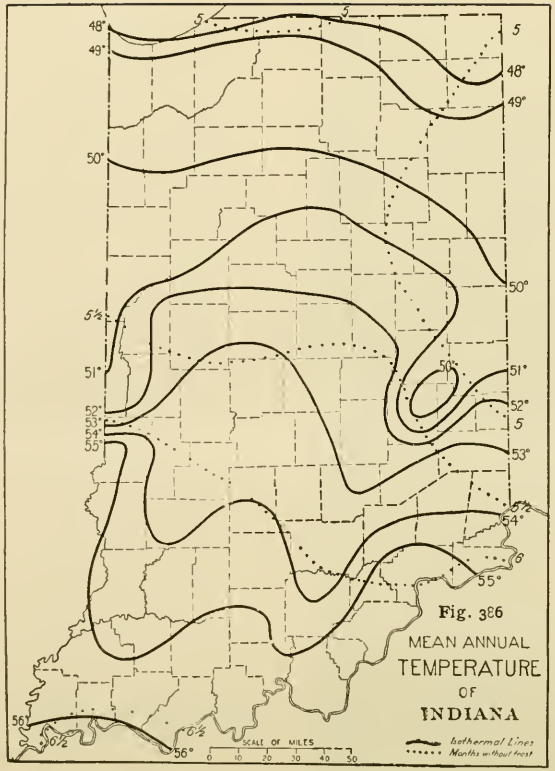

Fig. 386
MEAN ANNUAL
TEMPERATURE
OF
INDIANA

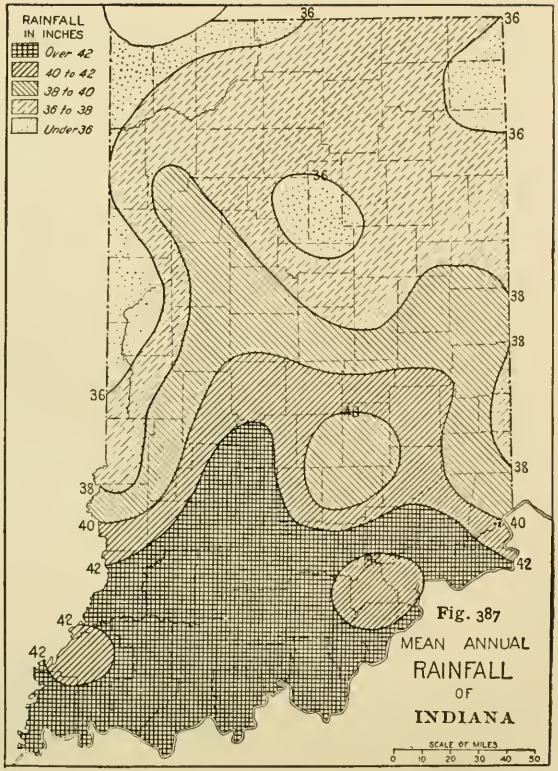

Fig. 387
MEAN ANNUAL
RAINFALL
OF
INDIANA

Climate.—Indiana is near the middle of the American belt of cold winters and hot summers (p. 181), and has a large range of temperature. It lies in the track of the cyclonic storms which sweep across the continent (pp. 204–206), and is subject to great and frequent changes of weather. The mean annual temperature, under the general control of latitude, varies from 48° in the north to 57° in the south, but there is a relatively cool area on the highest land and a relatively warm area along the lower Wabash (Fig. 386). The average for July ranges between 72° and 78°, for January between 24° and 36°. Extreme temperatures of 106° and —20° occur. The length of the growing season, or period between killing frosts, averages about 190 days along the Ohio, and 150 days in the north and east. The annual rainfall averages 36 inches in the northwest and 42 inches in the south (Fig. 387), but varies greatly from year to year. It is well distributed throughout the year, but is heaviest in May and June, and lightest in October.

Much of the summer rain is due to thunderstorms which are local in character, bringing rain to one county while an adjoining county gets none. Such irregularity of distribution is the cause of occasional droughts which affect some localities, but a serious deficiency of rainfall throughout the state in the growing season is of rare occurrence. Violent storms of wind, rain, and hail are not infrequent in the hot season, and tornadoes (p. 208), such as that which destroyed a part of Terre Haute on March 23, 1913, are liable to visit some part of the state any year. Heavy spring rains with melting snow cause high water in the rivers and bring some distress and destruction of property to the lowlands. The disastrous flood of March, 1913, with its accompanying loss of life and damage to bridges, railroads, and river towns, was due to the unprecedented rainfall of 6 to 11 inches in five days over central Indiana and Ohio. It has served to set the whole community to studying the problems of stream control, flood prevention, and human interference with natural channels of drainage.

The summers are long and warm enough and the rainfall sufficient to insure to Indiana, in an average year, a large yield

of a considerable variety of crops. The winters are long and severe enough to make necessary substantial provision for food and shelter for men and animals, compelling a degree of foresight, energy, and thrift. The climate, by its changes and contrasts, is highly stimulating to human effort.

Vegetation.—Temperatures and rainfall intermediate between the extremes of the upper Missouri and the lower Mississippi regions, a position lying across both the prairie and glacial borders, and the absence of barriers on all sides, place Indiana in an area of transition where northern, southern, eastern, and western floras overlap and intermingle. The result is that there are more than 2000 native species of plants growing in the state. Originally about one eighth of its area, lying chiefly in the northwest, was prairie and marsh. The rest of the state was covered with a heavy growth of summer forest (p. 232 and Fig. 192), composed of many species of oak, walnut, maple, beech, hickory, ash, elm, sycamore, cottonwood, tulip, gum, linden, and chestnut. The pine and cypress occur in the south.

In no portion of the United States could deciduous trees be found of larger size, or in greater variety, than in the lower Wabash valley. The pioneer settlers accomplished the almost incredible labor of felling the forest and clearing the ground for crops. This was accomplished in about two generations, and the people were thoroughly trained in the principles and practice of anti-forestry. Much of the timber was manufactured into vehicles, implements, and furniture, a process which is still going on. Within a century the virgin forest has been nearly destroyed, and the growing scarcity of timber is demonstrating the importance of reforestation.

The problems of forest conservation, involving the proper care of woodlots, cutting without waste, and the replanting of land of little value for agriculture, are as pressing in Indiana as in any state, and are being studied by the State Board of Forestry. An experiment station of 2000 acres is used to determine and demonstrate the best methods of timber culture. Efforts are made through the press, schools, farmers' institutes, official bulletins and reports, and other agencies, to inter-

est and educate the people in the scientific and economic use of the two or three million acres of woodland which remain.

Soils and Agriculture.—The most valuable of all the resources of Indiana lies in the soils, of which the state possesses a considerable variety (p. vi). The most extensive of these is the glacial clay. It consists of "the grist of the glacial mill" derived from the disintegration, grinding, and thorough mixture of many varieties of minerals and rocks, and is rich in all the requisites of plant life. The pure clay is tough, compact, and difficult to work, but it is almost everywhere mixed with 10 per cent or more of sand, pebbles, and boulders which modify these unfavorable conditions.

The glacial drift suffers from the disadvantage of poor drainage. The slopes are so gentle, the drainage systems so immature, and the drift so compact that a large part of the surface is occupied by lakes, marshes, and land which needs underdraining. Perhaps no state owes more to artificial drainage. Thousands of miles of open ditches and tile drains have greatly increased the productiveness of the land. As is clearly shown in the maps (p. vi, and Figs. 388, 389), it is the glacial clay which produces most of the crops of corn, wheat, and oats for which the state is famous.

The sandy soils of the lake regions and outwash plains are inferior for general farming, but are well adapted to potatoes, small fruits, and vegetables. The muck soils of the marshes, when properly drained, are unequaled for the production of celery, onions, and peppermint. The silt or loess of the older drift is a very fine sand overlying the glacial clay. It is easily cultivated, and generally produces fair crops of wheat, corn, oats, and clover.

In the unglaciated area, the soils are residual; that is, they have been produced by the disintegration of the underlying bed rocks, and vary in character with them. The soils of the knobstone are probably the poorest in the state, but are valued for pastures and orchards. The limestone soils are generally a stiff clay of deep brown or red color, the residue of the rock from which nearly all the lime has been removed by leaching. They produce wheat, blue grass, timothy, clover, and alfalfa.

The sandstone is generally too rugged for successful farming, and

Fig. 388
CORN
AND
WHEAT
Bushels per square mile
CORN
5000 to 10000
Over 10000
WHEAT
1000 to 2000
Over 2000
SCALE OF MILES
0 10 20 30 40 50

Fig. 389
OATS
AND
TOBACCO
Bushels of oats per square mile
1500 to 3000
Over 3000
Numerals show tobacco production
in pounds per square mile
1000
6000
17000
8000
10000
SCALE OF MILES
0 10 20 30 40 50

should be used chiefly for timber culture and dairying. The soils of the coal measures are variable, clay and loess being predominant, and are suitable for stock farming and fruit growing. Alluvial soils deposited by the overflow of streams are extensive on the bottom lands along the Ohio, Wabash, and White rivers. Their fertility is renewed nearly every year, and they produce large crops of corn. The heavy sand and gravel terraces or benches along the lower Wabash are unexcelled for wheat.

The United States Department of Agriculture and the Indiana Department of Geology and Natural Resources have completed a soil survey of more than half the counties in the state. The reports of these surveys contain the best available information as to the topography, structure, drainage, water supply, and agricultural possibilities of the areas which they cover. Copies may be obtained at little or no cost by application to the Departments.

The smooth surface and fertile soils of the glacial drift, the long, warm growing season, and the abundant rainfall are the controlling geographic influences which not only favor but compel the high rank of the state in agriculture and stock raising. The staple crops in order of their value are corn, wheat, hay, and oats, the greater part of which, except the wheat, is fed to stock on the farms where they grow. Potatoes stand fifth in rank and are largely grown in the northern moraine region. In the Ohio River counties the acreage of tobacco has increased 188 per cent in ten years, giving the weed sixth place in total value (Fig. 389). The discussions of these crops given on pp. 271–274, 286–287, 360–365 apply with obvious limitations to Indiana.

The corn belt of Indiana, as shown in Fig. 388, is decidedly localized in the Central Plain, only seven counties outside its limits producing more than 5000 bushels per square mile. Benton, Clinton, Tipton, Boone, Shelby, and Rush counties produced more than 10,000 bushels per square mile in 1909. The wheat belt (Fig. 388) is more equally distributed in the three physiographic regions of the state. The banner wheat county is Posey, with over 3000 bushels per square mile. Oat crops of more than 1500 bushels per square mile are confined, with a single exception, to the counties in the northern half of the state,

Fig. 390
SWINE
CATTLE
AND
SHEEP
Swine Over 40000 per county
Cattle Over 15000 per county
Sheep Over 15000 per county
SCALE OF MILES
0 10 20 30 40 50

Fig. 391
HORSES
AND
MULES
Horses Over 10000 per county
Mules Over 1000 per county
SCALE OF MILES
0 10 20 30 40 50

among which Warren and White lead with more than 4000 bushels (Fig. 389). Hay is more evenly distributed over the state than any other crop. Nineteen counties produce more than 100 tons per square mile, of which only four are in Southern Indiana. Orchard fruits are grown on a large scale in the extreme north and in one county on the Ohio River. Grapes and small fruits are about equally divided between the northern region and the extreme south. All these fruits can be successfully grown in any part of the state and would prove profitable on soils unsuited to corn and wheat.

Domestic Animals.—Among domestic animals swine exceed all others combined (omitting fowls) in number, and are naturally most numerous in the corn belt (Fig. 390). Rush and Montgomery counties lead with over 100,000 each. Cattle stand second among domestic animals in value; and numbers above 15,000 per county prevail over the Central Plain and northern moraine region. The number and distribution of sheep correspond closely with those of cattle. The number of horses is relatively small, but their total value exceeds that of all other animals combined. They are most numerous in the corn and oats belt (Fig. 391), while in Southern Indiana their place is largely taken by mules, which endure heat better, and are used extensively in coal mines. Domestic fowls are numerous in all parts of the state, and have a total value one third that of swine.

Farms.—In 1910, 92.3 per cent of the land area of the state was in farms, and 79.5 per cent was improved. The size of the average farm was 98.8 acres, and the average value of farm lands $62.36 per acre, an increase of 96 per cent in ten years. The total value of farm property was $1,809,000,000, an increase of 84.9 per cent in ten years. The total value of farm products was above $340,000,000, an increase in ten years of 66.7 per cent.

All statistics of agriculture combine to show the importance and value of a heavy coating of glacial drift, and the relative inferiority of residual and loess soils. The resultant of all the

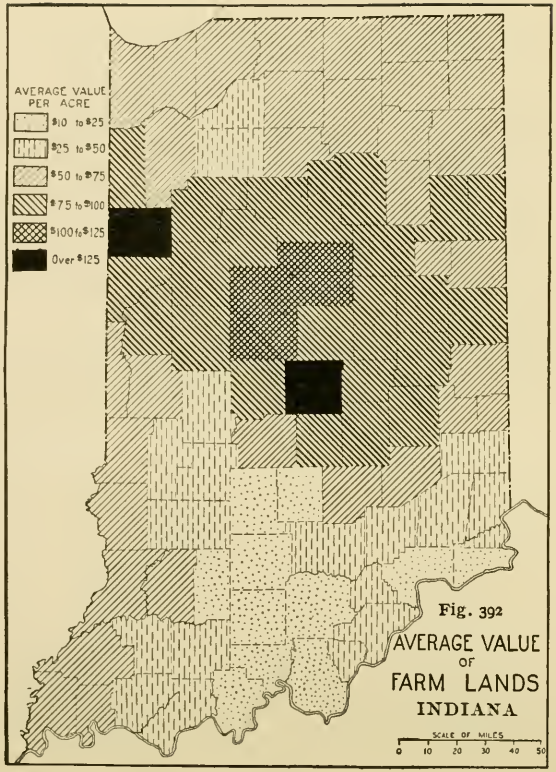

Fig. 392
AVERAGE VALUE OF FARM LANDS INDIANA

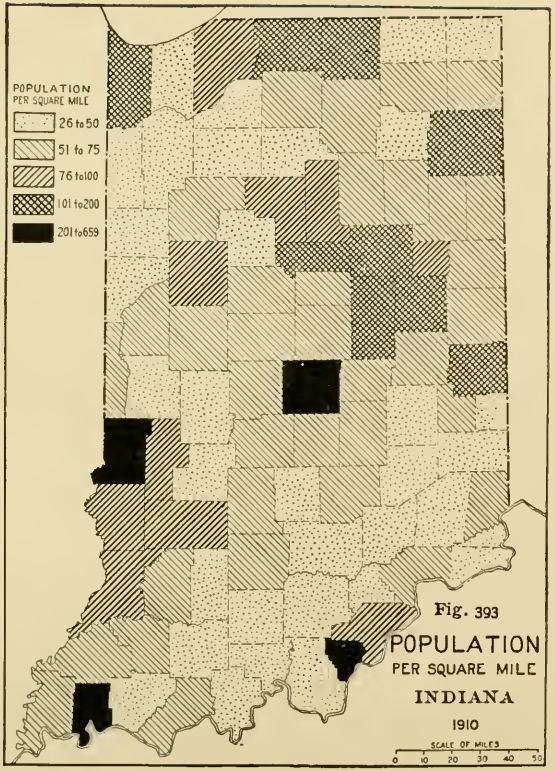

Fig. 393
POPULATION PER SQUARE MILE INDIANA 1910

factors may be summed up in the value of farm lands shown in Fig. 392. In Southern Indiana it averages about $40 an acre (in the unglaciated portion $30), on the Central Plain about $70, and in the Northern Region, which suffers some disadvantage in having more sand, gravel, and marsh, about $65. The increase in value of farm lands in ten years has been about 50 per cent greater in the glacial drift than in the driftless area. The average annual value of farm products is more than $5000 per square mile in the Central Plain, about $4000 in the Northern Region, and about $3000 in Southern Indiana. If natural instead of political boundaries were drawn Southern Indiana would be included in the same division with Kentucky, the Central Plain with Ohio, and the Northern Region in part with southern Michigan and in part with Illinois.

Manufactures.—For three quarters of a century Indiana was predominantly agricultural. Manufactures were generally confined to domestic raw materials, such as clay and timber products, foodstuffs, and distilled liquors, and were distributed in accordance with local supply and transportation facilities. The discovery of natural gas in 1887 marks the beginning of the transition to the present period, when the total value of manufactures is twice as great as that of farm products. The supply of apparently unlimited fuel in its most available form and at a nominal cost proved a strong attraction for capital. Conditions were favorable for the success of almost any industry, but especially of those which require power and heat, such as the manufacture of glass, tin plate, foundry and machine shop products, and finished steel goods. The "boom" was of course strongly localized, but within the gas belt was generally diffused. A hundred acres of farm land, provided with a switch from a railroad, was sufficient to furnish facilities for the largest plant, with cheap and healthful homes for the laborers. Thus scores of industrial villages sprang up from nothing. At the same time sleepy rural towns multiplied population by ten and were trans-

formed into cities with metropolitan conveniences and airs. In twenty years the gas was practically exhausted. Plants and villages were abandoned. Houses were torn down for fuel or dismembered and transported to be set up again in another place. The diffused rural industries largely ceased to exist; but the largest and strongest towns and cities are able to hold their own, and by importation of coal their manufactures continue to flourish. Their gains promise to be in a large measure permanent. Many plants were removed across the state to the coal fields, and in the case of those that did not go to the coal, the coal went to them. The final adjustment increased rather than diminished the total manufactures and distributed them more widely.

That the growth of manufactures is permanent is apparent from the fact that the total value of manufactured products in the state in 1914 was $730,795,000, an increase of 85 per cent in ten years. The leading products, in order of their value, were iron and steel, meats, foundry and machine shop products, cars, flour and grist mill products, distilled liquors, automobiles, carriages and wagons, furniture, lumber and timber, books and other printed matter, glass, canned goods, agricultural implements, bread, malt liquors, and cement, each of which had a value exceeding $10,000,000. All of these except iron, glass, and books are closely related to the home supply of raw material in the past or present. In most cases it is now necessary to bring in materials from outside the state.

The location of industries is determined chiefly by the sources of power, now almost entirely coal, facilities for transportation, and labor supply (p. 318). Therefore the principal manufacturing districts are in or near the coal fields, in the gas belt, at railroad centers like Indianapolis, and on Lake Michigan. Industrial plants are usually established near a large city, to which they add population. As the city grows, it attracts new plants, and thus manufacturing and urban growth stimulate each other in a cumulative manner.

Water Power. —While Indiana is not without water power, this resource now plays but a small part in the industrial life of the state. Indiana streams have generally wide valleys, gentle

slopes, and variable volume, conditions which are unfavorable for the utilization of power (pp. 101, 315–317).

The main stream of the Wabash is practically worthless for power on account of irregular discharge, perhaps due to removal of the forest. At Logansport its maximum flow is 200 times its minimum.

Fig. 394.—Hydroelectric power plant at Williams.

East White River is utilized at Williams to produce electric power for the Bedford quarries, and the West White at Noblesville. The Whitewater has the advantage of rapid fall which is used at Connersville and Brookville. The most valuable water powers are in the Northern Lake Region, on account of the natural storage basins which equalize the discharge. They are developed at Goshen, Elkhart, Mishawaka, and South Bend. The Eel is utilized at Logansport, and the Tippecanoe at Monticello. Hundreds of small water powers in all parts of the state, once very important, have been abandoned. The use of hydroelectric power will make some of these again profitable and lead to the development of new sites.

Transportation and Circulation.—Indiana has three great natural routes of travel and circulation: Lake Michigan, the Maumee-Wabash valley, and the Ohio River.

Indian and French canoemen sometimes cut across the northwest corner from the St. Joseph of Lake Michigan to the Kankakee at South Bend. More frequently they ascended the Maumee from Lake Erie, carried across at Fort Wayne to the Wabash and had easy paddling to the lower Ohio. It was on this route that the first white trading posts were established at Fort Wayne, Lafayette, and Vincennes. The Ohio River, from its size and connections, was the chief natural artery of human circulation. The Kanawha, Kentucky, and Greene on one side linked with the Whitewater and Wabash on the other to form north-south lines of communication. It was by means of the Ohio system that the first pioneer settlers came into Indiana in the first quarter of the nineteenth century, coming from the southern states and ascending the northern tributaries as far as the streams would float them. They built their homes, mills, and towns in the valleys facing the watercourses, while the uplands between were left as literal "backwoods," the Saxon equivalent of the modern *hinterland*. Steamboats began to run between Pittsburgh and New Orleans as early as 1811 and on the Wabash in 1823. The first improved wagon roads were built as feeders to this system, of which the most important was the Michigan road, extended in the period 1828–1834 from Madison on the Ohio to Michigan City on the lake. New Orleans was the seaport, outlet, and market of the community, to which produce was floated on flatboats, the crew often returning on foot.

When the national government found it necessary to tie its northwest territories to the old states by a highway, Indiana lay across the path, and the national road from Cumberland on the Potomac reached Richmond on the eastern border of the state in 1827 and Terre Haute on the western border in 1834, traversing the state nearly along its middle line.

When the waterway so effectively opened through the Erie Canal in 1825 was to be continued westward, the old canoe route of the Maumee-Wabash was converted into the Wabash and Erie canal, which reached Fort Wayne in 1832, Lafayette in 1841, Terre Haute in 1849, and Evansville in 1854. The canal brought a tide of settlers from New England and New York into northern Indiana. In 1830 five sixths of the population of the state lived in the southern counties, in 1850 one half were in the canal zone, and in 1860 there were twice as many on the Wabash as on the Ohio. The main channels of trade were changed from New Orleans to New York.

The first railroad belonged to the southern circulating system. It started from Madison in 1839 and reached Indianapolis in 1847. When the railroads began to extend westward

from the Appalachians, again Indiana lay across the path. About 1850 the present Vandalia Line began to parallel the national road from Pittsburgh, and in 1852 crossed the state. A few years later the Wabash Railroad followed the northern canoe and canal route from Toledo, while the Ohio and Mississippi crossed the southern hills from Cincinnati, all on their way to St. Louis. Then began the process, now nearly completed, by which homesteads and towns turned their backs upon the streams and faced toward the railroads. Of the riverain centers of population, many disappeared or dwindled to insignificance, and those which remain even now owe their ability to keep a respectable place in the census list to their railroad connections. In fifty years a score of east-west trunk lines have crossed the state, half of which sweep around the head of Lake Michigan to Chicago. A half dozen lines connect the Ohio with the Great Lakes. The total mileage is about 7000, and the various systems with their branches cover the state with a network which leaves few places more than ten miles from a railroad. The meshes are closest around Indianapolis and in the Chicago district, and widest in the rougher portions of Southern Indiana.

The principal cities are now connected by electric interurban traction lines having their chief centers at Indianapolis, Fort Wayne, and Terre Haute (Fig. 317). These are most effective agents in bringing about close relations between the urban and the rural population. Country people are no longer isolated, and city people are less cramped for space. Much attention has been paid to the improvement of wagon roads, and 22,000 miles, nearly half the mileage of the state, have been graveled or otherwise improved.

Surveys have been made for a ship canal connecting Lake Michigan with the Wabash and another to connect Lake Michigan with Lake Erie by way of the Maumee-Wabash gap, and the construction of one or both is a possibility of the future.

Population.—In 1910 Indiana was the ninth state in the Union in population, and contained 2,700,876 inhabitants, an

average of 75 to the square mile. The population map (Fig. 393) shows the influence of physical conditions upon the distribution of population. The rougher portions of Southern Indiana, the marshy Kankakee plain, and the high moraines have a relatively sparse population. The densest population occurs in the urban manufacturing counties, Marion leading with 664 per square mile. The central plain contained 48 per cent of the population with a density of 89, Southern Indiana 33 per cent with a density of 65, and the Northern Region 19 per cent with a density of 66.

The increase of population of the state in ten years was 7.3 per cent, the smallest in its history, and only one third that of the whole United States. There was a loss of population in 56 counties, well distributed through the state. The largest gain was in Lake (119 per cent), Marion, Vigo, St. Joseph, and Greene. The urban territory gained 30.5 per cent, and the rural territory lost 5 per cent, indicating the relative increase of manufactures over agriculture. The urban population amounted to 42.4 per cent.

The native whites of native parentage constituted 79 per cent, while less than 6 per cent were foreign born (in Lake county 25 per cent), of which 39 per cent were German. The strongest contrast in the general character of the people is that which exists between the descendants of the immigrants from the South and those from New England and New York. No sharp boundary can now be drawn between them, but the fortieth parallel or the national road roughly separates peoples who plainly differ in language and habits of work, life, and thought.

Cities.—In 1910 the urban population of Indiana resided in 88 towns and cities of over 2500 inhabitants, of which 20 had between 10,000 and 25,000 people, and 5 had over 50,000. Those of more than 10,000 population may be divided, according to the natural conditions which have determined their location and growth, into four groups.

The Ohio River Group.—These cities owe their existence and importance primarily to the river, and their fortunes have depended largely on the value of that waterway for transportation.

Evansville (69,600) is the river port of the Indiana coal

field. Its leading manufactures are flour, furniture, wagons, lumber, and tobacco. Its breweries, slaughtering, meat packing, and leather establishments, its foundries and machine shops, are also important. The growth of its manufactures is indicated by the increase of 27 per cent in five years in the value of the output. On account of good railroad connections Evansville is independent of river traffic, has increased its population 18 per cent in ten years, and holds third place in total value of manufactures (1914).

New Albany (20,600) and *Jeffersonville* (10,400) are important shipping points on the river where railroads cross it to Louisville. They barely maintain their population and show a slight decline in industries.

The Wabash River Group.—These cities owe their location and early growth to the Maumee-Wabash waterway and the Wabash and Erie Canal.

Fort Wayne (63,900), situated upon an old glacial outlet (Fig. 113), where goods were formerly carried over from the Maumee to the Wabash, very early became an important trading and military post. It was the first Indiana town to be reached by the Wabash and Erie Canal, which has since been followed by three trunk lines of railroad. It is the center of the electric roads of northern Indiana. It manufactures electrical apparatus, hosiery and knit goods, car wheels, oil tanks, gas machinery, and pianos. Its population increased 40 per cent in ten years, and it stands fifth in value of manufactures.

Huntington (10,300), *Peru* (10,900), and *Logansport* (19,000) owe much of their prosperity to the fact that the Wabash River has uncovered beds of limestone which are used for building, for quicklime, and for flux in the blast furnaces of Chicago. They also have large railroad repair shops. *Lafayette* (20,100), once the head of steamboat navigation, is beautifully situated on the bluffs and terraces of the Wabash, and is the seat of Purdue University.

Terre Haute (58,100) is situated upon a high terrace of the Wabash River in the center of the coal field. The cheapness of fuel and good railroad facilities have attracted manufac-

tures. The bottom lands of the river furnish large supplies of corn for distilleries, breweries, and flour and hominy mills. Shale and coal on the same ground are used in large plants for the manufacture of sewer pipe and paving brick. Glass, enameled ware, iron, paper, coke, chemicals, and greenhouse fruits are among the most valuable products. It is the seat of the State Normal School and Rose Polytechnic Institute. Its increase of population was 56 per cent in ten years, and it stands sixth in total value of manufactures.

Vincennes (14,900), opposite the mouth of the Embarras, where the Wabash valley is 15 miles wide, is the oldest town in Indiana. It was founded as a French trading post about 1720, and was the principal town of the Wabash region for more than a century. It was captured by the English in 1763 and by Virginia troops in 1778. From 1800 to 1813 it was the capital of Indiana Territory. It has distilleries, breweries, rolling mills, and glass factories, and is the business center of the Illinois oil field.

The Lake Michigan Group.—These cities owe their importance to the transportation facilities of Lake Michigan and the numerous railroads which pass its southern end. Some of them belong commercially to the great urban district of Chicago.

South Bend (53,700) grew up at the site of water power on the St. Joseph, which is still used but has been outgrown. It is most famous for the Studebaker wagon and automobile works and for the Oliver plow works, each of which is said to be the largest establishment of its kind in the world. It also has about one hundred other establishments which produce sewing machines, toys, woolen goods, watches, and other articles. Its growth was 50 per cent in ten years, and it is the fourth city in the state in value of products. It is the seat of Notre Dame University.

Mishawaka (11,900) adjoins South Bend. Its chief industry is the manufacture of rubber boots and shoes.

Elkhart (19,300) shares the water power of the St. Joseph. It is famous for the manufacture of brass-band instruments, and for the printing of almanacs. *Laporte* (10,500) has large agricultural

implement works. *Michigan City* (19,000), until recently the only Indiana lakeport, produces cars, chairs, and sandbrick. It is the site of the Indiana State Prison.

The Calumet District.—Nothing more significant has happened in Indiana than the recent rise in industrial importance of the cities on the Calumet. A belt of sand dunes, partly fixed and covered with scrub oak, partly drifting with the wind, and nearly worthless for most purposes, seems admirably fitted for industrial uses. A dozen trunk lines of railroad and the waterway of the Great Lakes furnish rare facilities for transportation. Cheap land, accessibility to iron ore from Lake Superior (pp. 369, 370), nearness to coal, petroleum, limestone, food supplies (p. 318), and the great market of Chicago, as well as a central position in the Mississippian province, form a unique combination. *Hammond* (20,900), on the southern edge of the dunes and adjoining the city of Chicago, includes Lake George and Wolf Lake—two shallow lagoons that open into Lake Michigan. Its prominent industries are the manufacture of iron and steel, printing and publishing, meat packing, and food preparation. *Whiting* (6600) has grown upon the lake shore around the great refinery of the Standard Oil Company. *East Chicago* (19,100), including Indiana Harbor, has ten miles of dock frontage on a ship canal which extends four miles inland to the Calumet River. Its industries are varied; but a dozen iron and steel plants, chemical works, oil refineries and lead smelters make it the second city in the state in value of manufactured products.

Gary (16,800), the youngest city in Indiana, owes its existence to the United States Steel Corporation, which in 1906 bought 8000 acres of land adjoining East Chicago. An artificial harbor 4000 feet long and 31 feet deep was constructed. The dunes were leveled, the Calumet River was canalized and reversed in flow, a complete plant was laid out and the site was fitted to it. Twelve blast furnaces are in operation and nineteen additional furnaces are planned. Coke ovens furnish 400 car loads a day and gas for 35 engines. 12,000,000 tons of ore are used annually. Open hearth furnaces, rail, billet, plate, and other mills of sufficient capacity to roll 6,000,000 tons of steel are provided, as well as cement works to utilize the slag. Works for the manufacture of steel tubes, sheet and tin plate, bridges, cars, locomotives, screws and bolts, are among the huge plants erected to elaborate the output of metal. Exact statistics about Gary are not available and are subject to daily change. It seems probable that the combined Calumet cities will soon shift the manufacturing and population center of Indiana to the northwest corner.

The Central Group.—The cities on the Central Plain owe their importance chiefly to the very rich farming country which surrounds them.

Anderson (22,500), *Elwood* (11,000), *Marion* (19,400), and *Muncie* (24,000) are in the gas belt, and during the period of gas abundance multiplied their population by five or ten. They have survived the failure of gas and are holding their own. They have a large variety of industries, among which iron and steel, wire, machinery, tools, glass, tin plate, and automobiles are prominent. They are clean and enterprising cities and their prosperity seems permanent. *Kokomo* (17,000) has increased its population 70 per cent by the growth of potteries, glass works, rubber, wire, nail, and mitten factories, and large automobile shops, an industry in which it was the pioneer in Indiana. *Richmond* (22,300) was settled largely by the Society of Friends and is the seat of Earlham College. It is now noted for the manufacture of implements, pianos, carriages, caskets, and furniture, and the growing of greenhouse flowers.

Indianapolis (234,000), the capital and metropolis of Indiana, was located near the center of the state in 1820, and is a remarkable example of a city which has flourished without any special local advantages. Although situated upon White River, it has neither water power nor water transportation. It is surrounded by a purely agricultural region, but the coal field is within easy reach. Indianapolis is a creation of the railroads, and is one of the greatest railroad centers in the United States. No less than fifteen trunk lines of steam road and thirteen lines of electric road radiate from it in all directions. It is the twenty-second city in the country in population, and its increase in ten years was 38 per cent.

As a distributing point it has no rival between the Ohio and the Great Lakes or between the Mississippi and the Atlantic coast. This makes it a favorable location for manufacturing and for wholesale trade. The value of its products is greater than that of the four next largest cities combined. Its largest industries are meat packing, foundries and machine shops, automobile making, flour milling, printing and publishing, canning and preserving, and furniture making. Its central position and ease of access render it dominant not only in industry and trade, but in politics, literature, art, and society.

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